## CREMLIN workshop: Engineering for advanced neutron instrumentation and sample environment



Contribution ID: 1

Type: Invited talk (+ poster)

## Minimizing activation, size and costs and yet maximizing efficiency - a challenge for engineering of instruments for research using neutrons

Tuesday, 15 May 2018 09:00 (30 minutes)

Engineering in the field of research with neutrons is a great challenge due to the materials which come into contact with neutrons and thus become radioactive.

The selection of suitable materials is essential: They have to a) guarantee the required functionality in each component of an instrument and b) minimize its activation at the same time.

In neutron research facilities shieldings are necessary to reduce the background of neutron and gamma radiation as far as possible in order to perform high quality measurements and to meet the radiation protection requirements. These constitute yet another challenge for the engineers as well as floor load limits in the available space. In addition, the cost factor must not be neglected.

An overview of suitable engineering materials as well as different designs of shielding elements will be presented and explained in detail as well as unexpected challenges, unconventional solutions and lessons learned.

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